

Applicant initially notes that in the Response to Arguments section on page 5 of the Office Action, the Examiner appears to be relying on certain teachings taken from references identified as U.S. Patent No. 6,353,628 (hereinafter "Wallace") and U.S. Patent No. 6,252,908 (hereinafter "Tore"). This is believed to be improper, in that the Wallace and Tore patents are not prior art relative to the present application. The statements by the Examiner to the effect that these references "are cited to show the state of the art" and provide certain teachings regarding the relationship between OFDM and DTM, should therefore be withdrawn.

With regard to claims 1-21, Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness under §103(a) over the proposed combination of Fertner and El-Arabawy.

In order to establish a *prima facie* case of obviousness, the proposed combination of references not only "must teach or suggest all the claim limitations," but there also must be "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, . . . to combine reference teachings" (MPEP §2143). In the present §103(a) rejection, at least independent claims 1, 8 and 15 each include limitations that are not found in either Fertner and El-Arabawy. Moreover, the Examiner has not identified with specificity any cogent suggestion or motivation for the proposed combination.

Applicant notes that each of independent claims 1, 8 and 15 includes a limitation relating to separation of communications on an uplink of a wireless cellular communication system from communications on the downlink using orthogonal frequency division multiplexing (OFDM). Applicant submits that, for the reasons given below, the Fertner and El-Arabawy references relied on by the Examiner in rejecting independent claims 1, 8 and 15 fail to teach or suggest at least this aspect of the claimed invention.

The Examiner relies on column 11, lines 36-41, and column 12, lines 30-35, of the Fertner reference in formulating the §103(a) rejection of independent claims 1, 8 and 15 over Fertner and El-Arabawy. However, Applicant believes that this portion of the Fertner reference fails to meet the above-noted limitation of claims 1, 8 and 15. Although the Examiner refers to column 12, lines 36-47, with regard to the rejection of dependent claims 4, 11 and 18, this portion of the Fertner reference is apparently not relied upon by the Examiner in the rejection of independent claims 1, 8 and 15.

Applicant therefore traverses the §103(a) rejection of independent claims 1, 8 and 15, on the ground that the column 11, lines 36-41, and column 12, lines 30-35 portions of the Fertner reference cited by the Examiner in support of the rejection of independent claims 1, 8 and 15 fail to meet at least the above-noted limitation regarding separation of uplink and downlink communications using OFDM.

The Examiner acknowledges that Fertner fails to disclose the use of OFDM to separate uplink and downlink communications in a wireless cellular system as claimed, but argues that it would have been obvious to modify the discrete multi-tone (DMT) system of Fertner so as to use OFDM in place of DMT since OFDM and DMT “are known to be closely related” (Office Action, page 2, section 2). Applicant submits that the Examiner has failed to identify any specific motivation for this proposed modification of Fertner. As noted, Fertner teaches a DMT system, with no suggestion to use OFDM in place of DMT. Although DMT and OFDM may be related, Fertner teaches to use DMT, and makes no mention of OFDM. Absent some identified motivation, Applicant believes that it is improper for the Examiner to argue that it would be obvious to modify Fertner to use OFDM in place of DMT.

The Examiner relies on the Abstract and Introduction portions of El-Arabawy in rejecting independent claims 1, 8 and 15. However, although these portions of El-Arabawy mention the use of OFDM in a wireless communication system, they describe the utilization of OFDM for downlink or base-to-mobile communications, and not the utilization of OFDM in conjunction with separation of uplink communications from downlink communications as claimed. Applicant refers the Examiner to FIG. 1 of El-Arabawy which shows that the OFDM signal is a base-to-mobile or downlink signal. Unlike the base-to-mobile or downlink signal in FIG. 1 of El-Arabawy, the mobile-to-base or uplink signal in FIG. 1 of El-Arabawy is not specified as being an OFDM signal, but is instead referred to as simply a “mobile transmitted signal.” El-Arabawy thus fails to provide any teaching regarding the use of OFDM for an uplink signal, contrary to the assertions made by the Examiner in the second paragraph of the Response to Arguments section of the Office Action. Moreover, as noted above, there is no teaching or suggestion in the El-Arabawy reference regarding the claimed separation of uplink and downlink communications using OFDM.

The Fertner and El-Arabawy references thus collectively fail to meet all of the limitations of claims 1, 8 and 15, and as a result a *prima facie* case of obviousness has not been established in the manner required by MPEP §2143.

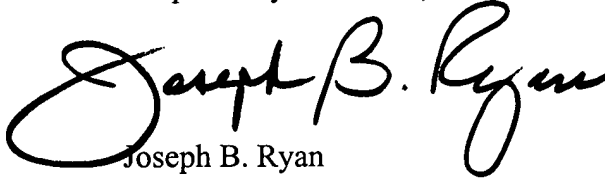
Applicant further submits that there is no motivation or suggestion for combining Fertner and El-Arabawy in the manner urged by the Examiner. More particularly, since El-Arabawy teaches use of OFDM as a base-to-mobile or downlink signal only, it is not combinable with the Fertner reference in the manner urged by the Examiner, since those skilled in the art would not be motivated by any explicit teaching of Fertner or El-Arabawy to make the proposed combination. The limitation of the El-Arabawy OFDM teachings to downlink signals only is apparent from the above-described reference to FIG. 1 of El-Arabawy. FIG. 1 of El-Arabawy shows that the OFDM signal therein is a base-to-mobile or downlink signal. As noted previously, unlike the base-to-mobile or downlink signal in FIG. 1 of El-Arabawy, the mobile-to-base or uplink signal in FIG. 1 of El-Arabawy is not specified as being an OFDM signal, but is instead referred to as simply a "mobile transmitted signal."

Dependent claims 2-7, 9-14 and 16-21 are believed allowable for at least the reasons identified above with regard to their respective independent claims. Moreover, one or more of these claims are believed to define additional patentable subject matter.

For example, dependent claims 5, 12 and 19 each include a limitation relating to repeating the assignment of carriers to uplink and downlink for each of a plurality of time slots, such that the number of carriers in first and second subsets of carriers, assigned to respective uplink and downlink communications, varies across the time slots in accordance with uplink and downlink traffic demands. The Examiner argues that such an arrangement is shown in Fertner, but the arrangements in Fertner do not dynamically vary the number of DMT subcarriers assigned to uplink and downlink across time slots. At least dependent claims 5, 12 and 19 should therefore be indicated as containing allowable subject matter.

In view of the above, Applicant believes that claims 1-21 are in condition for allowance, and respectfully requests the withdrawal of the §103(a) rejection.

Respectfully submitted,

A handwritten signature in black ink, reading "Joseph B. Ryan". The signature is fluid and cursive, with the first name "Joseph" and last name "Ryan" clearly legible. The middle initial "B." is written in a smaller, more formal script.

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Joseph B. Ryan
Attorney for Applicant(s)
Reg. No. 37,922
Ryan, Mason & Lewis, LLP
90 Forest Avenue
Locust Valley, NY 11560
(516) 759-7517